E R G O F I T O I N A C T I O N

Give Nature What Nature Wants

Ergofito
Aqua Application

For Oil Contamination
in Soil or Water

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THE BASICS:

Ergofito Aqua bio-remediation in soil or water will totally remediate hydrocarbon pollution through the process of natural decomposition.

The way it does this is simple:
The **Ergofito** bacteria breaks down the long carbon chains in the hydrocarbon, exactly the same way nature intended.

The **Ergofito** bacteria are aerobic and therefore need air and humidity to work.

APPLICATION IN SOIL:

When any soil is polluted by hydrocarbons the level of contamination is measured in TPH ppm (Total Petroleum Hydrocarbon parts per million).

Generally, soils are polluted at a TPH of between 5,000ppm and 200,000ppm.

The amount of Ergofito Aqua required to remediate can be calculated once the TPH level in the soil is established.

If the TPH measurements it not known, simply estimate the soil at a TPH of 50,000ppm.
Should the actual TPH be higher the time to remediate will take longer, but it will remediate.

The only provision is to keep the soil aerated and soil moist at above 16% humidity.

Please note that soil is only aerobic to a depth of about 25cm. Therefore, contaminated soil deeper than 25cm needs to be removed and spread out to a depth of 25cm.

Mixing instructions:

The following table indicates the amount of **Ergofito Aqua** required to bio-remediate hydrocarbon per **cubic meter** of polluted soil.

Keep in mind when applying:
The **Ergofito Aqua** is applied per **square meter** therefore divide the **cubic meter** application by four; thereby covering a four-square meter area.

The table below is calculated on the following formula:
If the Hydrocarbon TPH is 100% that is 1,000,000ppm than the **Ergofito Aqua** required for remediation is 30Kg per **Cubic Meter** of Hydrocarbon.

TPH in SOIL	ERGOFITO AQUA	WATER in LITRES
5000 - 15000	**0.3Kg per M^3**	**12**
16000 - 20000	**0.6Kg per M^3**	**24**
21000 - 30000	**0.9Kg per M^3**	**36**
31000 - 50000	**1.5 Kg per M^3**	**60**
60000 - 80000	**2.4Kg per M^3**	**96**
90000 - 120000	**3.6Kg per M^3**	**144**
130000- 200000	**6.0Kg per M^3**	**240**

The **Ergofito Aqua** must be mixed on the day of application.
The mixed solution **cannot** be stored.

The **Ergofito Aqua** can be applied by any method from a watering can, a water bowser or an irrigation system.

If the water volume is exceeded as indicated in the above table it will make no difference; the above table indicates a minimum required volume of water.

It is the amount of **Ergofito Aqua** per cubic meter that is important.

Applying Ergofito in polluted soil:

If the hydrocarbon pollution is superficial (down to a maximum of 25 cm) no excavation is necessary.

If the hydrocarbon pollution is deep and exceeds a depth of more than 30cm, then the soil must be excavated and placed in an area where it must be spread out at a depth of 25cm prior to treating it.

Example:

Where superficial hydrocarbon contamination has occurred, immediately mix **Ergofito Aqua** with water and apply over 30 days with an application once a week.

If the TPH is estimated at 60,000ppm where the ground penetration does not exceed 25cm, each **square meter** will be equivalent to 1/4 of a **cubic meter**.

Therefore: 2.4Kg/4 = 0.6Kg of **Ergofito Aqua** mixed with 24 liters of water will be required over the **four** applications;

Resulting in four equal applications of 150grams of **Ergofito Aqua** mixed in 6 liters of water, per application, per **square meter**.

Applying Ergofito in polluted waters:

When water is polluted by hydrocarbons (fresh or saline) the hydrocarbons tend to remain on the surface except if harmful chemicals are sprayed which may cause the hydrocarbon to sink and lead to environmental damage.

Ergofito Aqua is applied immediately by spraying onto the hydrocarbons.

As **Ergofito Aqua** has a natural surfactant, it will attach itself to the hydrocarbons until total decomposition is achieved.

The quantity of oil on the surface needs to be estimated and **Ergofito Aqua** must be applied at a minimum quantity of 50grams per square meter, mixed with any amount of water (sufficient to wet the full square meter).

Only one application is necessary. Even if wind or currents disperse the oil, **Ergofito Aqua** will decompose the oil.

REQUIRED TIME OF REMEDIATION:

Remediation time is dependent on:

- Ambient temperature
- Soil humidity
- TPH content

Ergofito Aqua contains natural bacterium and therefore operates better in warm or hot climates.

If the ambient temperature is above 20^0C, the time of remediation will be approximately 35 days from the first application.

If the hydrocarbon is depleted of all lower chains (C10 to C20) and it is mostly higher value Carbon chains (C21 to C90) it will take up to 90 days for total remediation.

Note: **Ergofito Aqua** Bacterium will die above 70^0C and below -25^0C and go into hibernation below 0^0C.

PROOF OF CONCEPT BY SMALL SCALE TESTING:

In Soil:

It is possible to run a small-scale test following the following procedure:

1. Spread the hydrocarbon-contaminated soil in a control area directly on top of the ground. At least 1 to 10 square meters are advisable.
2. Ensure that the spread soil thickness does not exceed 25cm.
3. Mix **Ergofito Aqua** with water (as per above table) and apply uniformly over the contaminated soil with a watering can.
4. Immediately after the application, till the soil to ensure product penetration and aeration.
5. Once a week, test TPH by taking samples from random areas and then reapply **Ergofito Aqua** and till.
6. To ensure continuous and vital soil separation, till once a day.
7. Continue the weekly applications until the desired TPH remediation has been achieved.

In water:

1. Use a shallow container of not less than one square meter (as hydrocarbons floats, the depth is not important).
2. Apply hydrocarbons in the water (fresh or saline) at a rate of between TPH 10,000 and 300,000 ppm.
3. Spray **Ergofito Aqua** uniformly over the whole water surface.
4. Measure TPH once a week
5. Ensure that the test is performed outside in the open, as the bacterium requires wind aeration and the elements to work efficiently.
6. The amount of **Ergofito Aqua** applied will depend on the speed required for the decomposition of the hydrocarbons.
7. For testing use 100 grams of **Ergofito Aqua** per square meter.